José Carrasquero

Fish and Habitat Biologist

Mr. Carrasquero is Herrera's lead fisheries biologist. He has 12 years of professional experience and graduate and undergraduate degrees from the School of Fisheries of the University of Washington. Mr. Carrasquero is highly skilled in habitat assessment, identification of instream and lakes fish limiting factors, and fish and habitat data interpretation and analysis. He is a member of the American Fisheries Society and the American Institute of Fisheries Research Biologists. Through his experience as a Research Fisheries Biologist with the National Marine Fisheries Service (NMFS), he is well versed in habitat assessment techniques used by NMFS for the evaluation of the effectiveness of habitat restoration projects. He has conducted bull trout and salmon habitat studies and population assessment, and has integrated fish and habitat survey methodologies for the USFS as a tool to identify and characterize sensitive areas for the protection of bull trout populations. He has conducted numerous electrofishing and daytime and night snorkeling surveys. Mr. Carrasquero has assisted the City of Seattle, the City of Bellevue, the City of Kirkland and the City of Olympia with ESA compliance. He has completed biological assessments for numerous fish habitat restoration and enhancement projects.

In addition, Mr. Carrasquero has conducted marine habitat research in the San Juan Archipelago at the University of Washington, Friday Harbor Laboratories. He has conducted intertidal and estuarine habitat and biological assessment in the Puget Sound including eelgrass and kelp bed studies. In the Puget Sound, Mr. Carrasquero has conducted both phytoplankton and zooplankton sample collection and analysis. He has also conducted fish population surveys through beach seining and scuba diving. Mr. Carrasquero has participated in environmental impact assessment of effluents from thermoelectrical plans on coastal marine habitat flora and fauna. He has conducted aquatic toxicology research on Puget Sound salmon species and is highly skilled in habitat assessment, identification of vertebrates and invertebrates limiting factors, and fish and habitat data interpretation and analysis.

Key Project Experience

- ***Bull Trout and Salmon Habitat Surveys.*** Mr. Carrasquero conducted bull trout and salmon habitat assessment for the USFS. To this end, Mr. Carrasquero integrated fish and habitat survey methodologies for the USFS as a tool to identify and characterize sensitive areas for the protection of bull trout populations.
- ***Bull Trout Survey.*** Mr. Carrasquero conducted bull trout sampling of distribution and abundance through daytime and night snorkeling surveys. This work was conducted for the USFS in tributaries of the Skykomish River using the Washington Department of Fish and Wildlife (WDFW; Bonar et al. 1997) and the USFS (Thurow 1994) methods. In addition, he studied fish assemblage, distribution, and abundance in Gold Creek, a tributary of the Yakima River.
- ***Bull Trout Habitat and Population Survey Training.*** Mr. Carrasquero trained a U.S. Forest Service crew in conducting habitat and fish surveys using TFW, USFS, Thurow (1994), and Bonar et al. (1997) methods. The training took place in Gold Creek.
- ***Winter Habitat Utilization.*** Mr. Carrasquero assessed chinook and coho salmon and trout winter habitat utilization in selected streams in Washington through nighttime snorkeling and daytime electrofishing. He compared nighttime snorkeling and daytime electrofishing techniques for estimating juvenile coho and trout populations, and assessed coho and trout nocturnal behavior in response to environmental temperature and photo-period in a pilot experiment. He conducted computerized data compilation and analysis of salmonid habitat, fish and amphibian population.
- ***Fishway and Stream Bank Stabilization.*** Mr. Carrasquero assisted the City of Bellevue with ESA compliance and biological assessment for the fishway and stream bank stabilization project in Kelsey Creek, Bellevue, Washington. The proposed action involved the replacement of existing log weirs with concrete weirs and the stabilization of the stream bank with concrete crib structures to improve fish passage and habitat conditions. The project also included planting of the riparian areas to enhance habitat conditions. Mr. Carrasquero provided project design assistance and managed the project. In addition, he reviewed the biological assessment report for this project.

- ***Stream Weirs at Glendale Golf Course.*** Mr. Carrasquero assisted the City of Bellevue with ESA compliance and biological assessment for the stream weirs at Glendale Golf Course project in Kelsey Creek, Bellevue, Washington. The proposed action involved the addition of weirs to decrease step pool elevation and to improve fish passage. The project also included planting of the riparian areas to enhance habitat conditions. Mr. Carrasquero conducted the fish habitat assessment, provided project design assistance, prepared the biological assessment and managed the project.
- ***Kelsey Creek Park Habitat Enhancement.*** Mr. Carrasquero assisted the City of Bellevue with ESA compliance and biological assessment for the Kelsey Creek Park habitat enhancement project in Bellevue, Washington. The proposed action involved the addition of large woody debris and riparian vegetation to improve fish habitat conditions. Mr. Carrasquero conducted the fish habitat assessment, provided project design assistance, prepared the biological assessment and managed the project.
- ***Hood Canal Bridge Improvement.*** Mr. Carrasquero prepared an aquatic species, critical habitats and related regulations section of the draft Water Quality Discipline Report for the Hood Canal bridge improvement project in Jefferson/Kitsap counties, Washington. The aquatic species, critical habitat and related regulation section encompassed marine and upland aquatic species and their habitat. For this purpose, construction impacts, long-term operational impacts, and secondary and cumulative impacts were analyzed with consideration to local state and federal laws and within the context of potential impacts to water quality. The potential impacts on the following marine and freshwater habitats were assessed: eelgrass, kelp beds, drifting habitats, marine microlayer, intertidal zone, streams, and wetlands. In addition, the impacts on the following species groups were also assessed: crabs, mollusks, reptiles, fish, and marine mammals.
- ***Juanita Creek Biological Assessment.*** Mr. Carrasquero assisted the City of Kirkland with the preparation of a biological assessment for the replacement of existing Juanita Creek culvert at the NE 124th Street crossing in Kirkland, Washington. For this purpose, he conducted an in-stream fish habitat survey and prepared a biological assessment for ESA threatened and endangered species that occur in Juanita Creek. In addition, Mr. Carrasquero attended informal consultation meeting with the project design team and state biologists to address ESA related issues, and to provide design recommendations to improve fish passage while avoiding adverse impacts on protected species.
- ***SR 539 Horton to Tenmile Road Widening.*** Mr. Carrasquero is assessing environmental impacts on the aquatic habitats and species that occur on a total project length of 5 miles along SR 539 extending north of Bellingham to Whatcom County, Washington. A total of 30 wetlands occur within the project site, which include: palustrine emergent, scrub/shrub, and forested wetlands; and riverine lower perennial wetlands. SR 539 crosses five streams within the project area. In these streams, fish habitat was assessed and a Stream Survey Technical Memorandum was prepared. To assist WSDOT with ESA compliance, Mr. Carrasquero is preparing a draft biological assessment for the SR 539 project and is collaborating with Herrera's wetland scientist in the preparation of the draft wetland mitigation plan. The assessed impacts included direct and indirect impacts. Direct impacts include fish and wildlife disturbances, loss of wetland acreage from filling, clearing of vegetation, and accidental spills. Indirect impacts involve loss of wetland buffers, water quality degradation from storm water runoff, changes in drainage patterns, and reductions in groundwater recharge.
- ***Bannerwood Park Fish Improvements.*** Mr. Carrasquero is assisting the City of Bellevue with ESA compliance and managing the Bannerwood Park fish improvement project in Bellevue, Washington. The proposed action involves a culvert replacement and in-channel and riparian habitat restoration and enhancement to improve fish passage and habitat conditions. He conducted the fish habitat assessment and is currently completing a BA report for the city's review.
- ***Little Anderson Creek Culvert Replacement.*** Mr. Carrasquero is managing the Little Anderson Creek culvert replacement project on the Kitsap Peninsula, Washington. The project involves the replacement of an undersized culvert with a bridge to improve fish passage. He is providing fish passage design assistance, identifying potential ESA issues, and recommending site- and project-specific mitigation measures and BMPs. In addition, Mr. Carrasquero is conducting a biological assessment of the project and preparing a BA report to assist Kitsap County with ESA compliance.

- ***Over-Water Structures: Freshwater Issues - White Paper.*** Mr. Carrasquero prepared a final draft of a white paper addressing the environmental effects of the construction, maintenance, and operation of in-, on-, and over-water structures in freshwater environments. The paper is one of a series that presents a scientific basis to guide the state of Washington in developing guidelines for freshwater projects. This white paper was prepared for WDFW, WDE, and WSDOT.
- ***East Creek Culvert Replacement.– Biological Assessment and JARPA*** Mr. Carrasquero managed the East Creek Culvert replacement project to assist the City of Bellevue with the preparation of a Joint Aquatic Resources Permit Application (JARPA). Mr. Carrasquero prepared a biological assessment for threatened and endangered species in East Creek and the neighboring Richards Creek, and prepared a JARPA package. The project involved replacing an existing culvert system with a three-sided bridge to resolve flooding problems and to improve fish passage and habitat. Mr. Carrasquero assessed fish habitat for construction impacts on chinook, coho salmon, and bull trout. He recommended best management practices and conservation measures (that were included in construction plans) to avoid, minimize, and mitigate detrimental effects of the proposed actions. He also recommended fish removal and relocation techniques to be implemented prior to initiation of the construction activities. In addition, he coordinated with the U.S. Army Corps of Engineers to facilitate the review process and the city's compliance with ESA.
- ***Richards Creek Sediment Management Project.*** Mr. Carrasquero managed the biological assessment for the Richards Creek sediment management project, in Bellevue, Washington. It consisted of construction of three instream sediment traps and replacement of a circular culvert with a three-sided bridge to resolve flooding problems and to improve the quality of fish passage and habitat. Mr. Carrasquero assessed adverse effects on ESA-listed and proposed fish species and recommended best management practices and conservation measures.
- ***Seattle Transportation (SEATRAN) Endangered Species Act Implementation Assistance.*** Mr. Carrasquero is currently reviewing Seattle Transportation projects for ESA (Section 7c) compliance and effect determinations. He is conducting biological assessment and effect determinations for 14 construction and maintenance projects. He has researched best management practices (BMPs) suitable to the different city construction projects, for the protection of fish habitat and the aquatic organisms. Another aspect of Mr. Carrasquero's role involves educating city project managers on the selection of BMPs and mitigation measures to eliminate or minimize adverse effects of construction projects on fish species and habitat.
- ***Alaskan Way Seawall Repair Biological Assessment.*** Mr. Carrasquero assisted the City of Seattle with the preparation of a biological assessment for threatened and endangered species in Elliot Bay in the Puget Sound, Washington. The proposed action involved repairing existing seawall parallel to Alaskan Way, along the Seattle waterfront in Elliot Bay. Performed background data review, field investigation, and assessment of construction impacts. In addition, conducted effect determination for Chinook salmon, coho salmon, bull trout, Humpback whale, steller sea lion, and marbled murrelet, and recommended BMPs and conservation measures to be include in construction plans to avoid detrimental effects.
- ***Bertona Street Seawall Repair Biological Assessment.*** Assisted the City of Seattle Transportation Department with the preparation of a biological assessment for threatened and endangered species in the Puget Sound, Washington. The proposed action involved repairing an existing seawall within the Bertona Street right-of-way near Discovery Park in Seattle. Performed background data review and field investigation to determine the effects on Chinook salmon, coho salmon, bull trout, bald eagle, and marbled murrelet reported to occur in the project area. Also, assessed construction impacts, and recommended BMPs and conservation measures to be included in construction plans to avoid detrimental effects.
- ***Repair and Maintenance of Building Boatyard L.C.*** Assisted Century Pacific LP with a biological assessment for compliance with the Land Use Code of the Department of Construction and Land Use. The proposed project consisted of repair and replacement of an existing boatyard on Lake Union in Seattle, Washington. To satisfy this requirement, he conducted a biological evaluation of the potential effects of the proposed construction activities. This evaluation included determination of effects of increased shaded areas, increased impervious surface, and construction activities on Chinook salmon, its habitat, and its prey. Specifically, the evaluation considered potential negative effects on Chinook rearing habitat, potential increase of juvenile Chinook predator fish habitat, and potential increase in the number of predator fish. IN addition, he estimated potential loss of Chinook rearing habitat and potential increase in juvenile salmon predation due to the increase of the lake's shaded area.

- ***Princeton Avenue Bridge Replacement.*** Assisted SEATRAN with the preparation of a No Effect letter for bridge replacement at Princeton Avenue NE between Sand Point Way NE and NE 55th Street in Seattle, Washington. Conducted site reconnaissance, and assessed potential adverse impacts on ESA protected species. Fish habitat for, and construction impacts on, chinook and coho salmon as well as bull trout were assessed. To avoid potential adverse effects on fish species, assisted with the design considerations for the stormwater system. The design included stormwater treatment and detention for all net new impervious surfaces. In addition, recommended site-specific BMPs and mitigation measures, which were included in the project plans.
- ***Biological and Habitat Survey Data Report.*** Assisted Washington State Ferries with the biological evaluation part of an environmental review (SEPA) of the Chinook-class passenger-only ferry service. Conducted habitat survey along the coastlines of Rich Passage. Biological communities and habitat conditions within the intertidal and shallow subtidal zones were documented and evaluated. Statistical analysis of the survey data is being conducted to assess potential adverse effects of the ferry wakes on the biological communities.
- ***Westlake Union Improvements.*** Implementing a strategic approach for Endangered Species Act (ESA) for Seattle Transportation, Mr. Carrasquero conducted biological assessment for proposed Westlake Union Improvements project. The biological assessment was performed to determine whether chinook salmon, coho salmon, or bull trout would be adversely affected by the construction or operation of the proposed project. This biological assessment included evaluation of potential negative effects and recommendation of mitigation measures and best management practices to protect ESA listed species and their habitat. The biological assessment was prepared in accordance with Section 7(c) of the ESA as the coordination tool for permitting process under ESA requirements.
- ***12th Avenue Gateway.*** Mr. Carrasquero assisted SEATRAN with the preparation of a no effect letter for roadway and sidewalk improvements at the interception of Boren Avenue S. and 12th Avenue S. in Seattle, Washington. For this purpose, Mr. Carrasquero conducted site reconnaissance, and assessed potential adverse impacts on protected species. A critical element of this project was its proximity to a soil-contaminated site under the jurisdiction of the Department of Ecology. To avoid potential adverse effects on fish species, associated with stormwater acting as a mechanism for pollutants transport through ground water or sheet flow, Mr. Carrasquero proposed site-specific BMPs and mitigation measures that were included in the project plans.
- ***Seattle Transportation Arterial Major Maintenance Program, Contract #2 and 4.*** Mr. Carrasquero conducted integrated biological assessments for multi-site maintenance projects through site-specific analysis and determination of cumulative effects. Biological assessments consisted of research, review, and field reconnaissance.
- ***SR 285th / SR 28 Interchange Area Improvement Study.*** Mr. Carrasquero will be responsible for the Endangered Species Act (ESA) compliance for the SR285/SR28 Interchange study in East Wenatchee, Washington. He will be responsible for data acquisition and analysis, agency consultation, report preparation, and environmental evaluation of project alternatives. Currently identified species to be included in this effort include federally listed Columbia River salmon and trout species.
- ***Seattle Public Utilities, Drinking Water Reservoir.*** Conducted underwater (diving) data collection through videotaping and sampling of periphyton and aquatic macroalgae in the Lake Youngs Reservoir near Seattle, Washington.
- ***Habitat Restoration Assessment.*** Mr. Carrasquero assessed the effectiveness of instream restoration projects designed to improve and restore salmonid habitat, which involved stream surveys and fish population (anadromous and resident) estimates though daytime electrofishing and nighttime snorkeling. The sampling of distribution and abundance was conducted according with the USFS methods. The work was conducted for the NMFS in selected streams in Washington
- ***Nooksack Basin Historic Conditions Study.*** Mr. Carrasquero prepared proposals for the Nooksack Basin Historic Conditions Study and for the Sequalitchew Creek Habitat Analysis. He also served as on-call fisheries biologist.

Additional Training

Tidal Marsh Restoration in the Pacific Northwest, April 6, 2001

Culvert Guidelines Workshop. WDFW. Yakima, May 25, 2000.
Forage Fishes of Puget Sound Workshop. SWS. May 12, 2000.
Stormwater Treatment, Biological, Chemical and Engineering Principals. University of Washington. Seattle, WA. September 15-16, 1999.
Design and Retrofit of Culverts in the Northwest for Fish Passage. University of Washington. Seattle, WA October 20 and 21, 1999.
ESA in relation to transportation projects for WSDOT. Olympia, WA, Spring 1999.
Restoring Estuarine Ecosystems: NOAA / People for Puget Sound, Seattle, WA, Spring 1999.
Fish and Habitat Survey: NOAA / NMFS, Seattle, Washington, Spring 1997.
Habitat Restoration Assessment: Northwest Fisheries Science Center, Seattle, WA, Summer 1997.

Publications

Carrasquero, Verde, J.R. 1999. Role of Associated Bacteria in *Heterosigma Carterae* Toxicity to Salmonids. Aquatic Toxicology. 45(1) 19-34.

Taub, F., Howell-Kübler, A.Nelson M., and Carrasquero, J. 1998. An Ecological Life Support System for Fish for 100-Day Experiments. Life Support & Biosphere Science 5. 107-116.

Carrasquero, Verde, J.R. 1987. Ecological Studey of *Artemia* Populations in Araya's Saltworks, Venezuela (abstract). Artemia Newsletter. February 1988. 7, 72-73.

Carrasquero, Verde, J.R. 1987 Aquaculture Integrated into Exploitation and Production of Salt in the Araya Saltworks (abstract). Artemia Newsletter. February 1988. 7, 73.

Professional Affiliation and Certifications

American Fisheries Society
Association of the American Institute of Fisheries Research Biologists
Scientific Diving Certificate, University of Washington
Fellowship winner, Egtvedt Trust (University of Washington, School of Fisheries, 1996-1997)
Fellowship winner, Friday Harbor Laboratories (University of Washington, Spring 1994)
Fellowship winner, Fundacion Gran Mariscal De Ayacucho (IUTEMAR, 1978-1982)
Guest Speaker at the 1996 Spring Workshop of the Washington Fish Growers Association